

We Claim:

1. A method of forestalling actions that would defeat an access-control mechanism for a volume at least a portion of which is on a storage-device, communication between an input/output (I/O) initiator and the storage-device taking place via a stack of device objects (DOs) representing the volume, the method comprising:

selectively preventing, at the stack-level, a change in characteristic information for the volume.

2. The method of claim 1, further comprising:

receiving an input/output request packet (IRP) that is traversing a stack of device objects, the stack representing a data-storage device;

determining whether the IRP represents a request to change characteristic information for the storage-volume to which the stack corresponds; and

selectively failing the IRP depending upon the type of change being requested.

3. The method of claim 2, the method further comprising:

checking whether the IRP is of a type meriting scrutiny; and

skipping the determining and selectively-failing steps if the IRP does not merit scrutiny.

4. The method of claim 3, wherein:

the checking step inspects whether the IRP includes the major function code IRP_MJ_CREATE; and

the skipping step skips if the IRP does not include IRP_MJ_CREATE.

5. The method of claim 2, wherein

the IRP is received at a location in the stack represented by a device object;

the characteristic information includes a volume-ID of the volume to which the device object corresponds; and

the determining step determines whether the IRP represents a request to change the volume-ID.

6. The method of claim 5, wherein the volume-ID is the volume label.

7. The method of claim 2, further comprising:

checking whether an identifier (ID) of the volume (volume-ID) in the IRP matches the volume-ID stored as corresponding to the volume; and

choosing to fail the IRP if the volume-ID in the IRP does not match the stored volume-ID.

8. The method of claim 7, further comprising:

checking, if the volume-ID in the IRP does not match the stored volume-ID, whether the underlying initiator to which the IRP corresponds has permission to change the volume-ID; and

failing the IRP if the initiator does not have permission to change the volume-ID.

9. The method of claim 8, wherein the checking step checks one or more bits in an unreserved area of the IRP for a bit-pattern the presence of which indicates that the initiator has permission to change the volume-ID.

10. The method of claim 7, further comprising:

checking, if the volume-ID in the IRP does not match the stored volume-ID, whether the volume-ID in the IRP is available for use; and

failing the IRP if the volume-ID in the IRP is not available for use.

11. The method of claim 10, further comprising:

comparing the volume-ID in the IRP to a list of existing volume-IDs.

12. The method of claim 11, the method further comprising:
updating, if the volume-ID in the IRP is found to be available for use, the list to include the volume-ID in the IRP.
13. A machine-readable medium including instructions execution of which by a machine forestalls actions that would defeat an access-control mechanism for a volume of a storage-device, the machine-readable instructions comprising:
a code segment that creates and attaches a filter device object to a stack of device objects representing a storage-device;
a code segment for selectively preventing, at the stack-level, a change in characteristic information for the volume.
14. The machine-readable instructions of claim 1, further comprising:
a code segment for receiving an input/output request packet (IRP) that is traversing a stack of device objects, the stack representing a data-storage device;
a code segment for determining whether the IRP represents a request to change characteristic information for the storage-volume to which the stack corresponds; and
a code segment for selectively failing the IRP depending upon the type of change being requested.
15. An apparatus for forestalling actions that would defeat an access-control mechanism for a volume at least a portion of which is on a storage-device, communication between an input/output (I/O) initiator and the storage-device taking place via a stack of device objects (DOs) representing the volume, the apparatus comprising:
a memory in which is created the stack of device objects representing a storage-device, the stack including a filter device object (DO); and
filter driver means for selectively preventing, at the stack-level, a change in characteristic information for the volume.

16. The apparatus of claim 15, wherein the filter driver means is further operable for

determining whether an input/output request packet (IRP) arriving at the filter DO represents a request to change characteristic information for the storage-volume to which the stack corresponds, and

selectively failing the IRP depending upon the type of change being requested.

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